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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,008	10/31/2003	Richard Bergman	SP03-151	1437

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EXAMINER	
DANIELS, MATTHEW J	

ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,008	BERGMAN ET AL.	
	Examiner	Art Unit	
	Matthew J. Daniels	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *1-10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/8/05, 8/22/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. In the amendment filed 8 August 2005, Claims 1-13 are pending. Claims 1-10 are withdrawn as being drawn to a non-elected invention. Claim 11 is amended, and new Claim 13 is presented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 11 and 12** are rejected under 35 U.S.C. 102(b) as being anticipated by Brundage (USPN 5223188). **As to Claim 11,** Brundage teaches a method for stiffening a wet ceramic body comprising (Cols. 5-7): providing a plastically deformable material including an organic binder having a thermal gel point (4:57-59); forming the plastically deformable material through an extrusion die to form the wet ceramic body (6:42-63); passing the wet ceramic through a field of energy having a frequency in the range of 100 MHz to 30 GHz (4:55-66, 10^7 Hz is equivalent to 10 MHz and 10^{13} is equivalent to 10,000 GHz); and heating the wet ceramic body to gel the organic binder (5:20-26). As to the new limitation, Brundage's range encompasses the claimed range (4:55-66), and therefore still anticipates the claim. **As to Claim 12,** Brundage additionally teaches a method wherein the plastically deformable material comprises cordierite-forming material (6:33-40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claim 13** is rejected under 35 U.S.C. 103(a) as being obvious over Brundage (USPN 5223188) in view of White (USPN 3478188). In this claim, the Examiner interprets the word "between" to be exclusive of the endpoints of the claimed range. In this case, because the TE and TM modes can only occur in integer values, this claim is interpreted to be drawn to TE(xy) or TM(xy) modes where x is any integer from 1 to 7 and y is 2. **As to Claim 13,** Brundage teaches a method for stiffening a wet ceramic body comprising (Cols. 5-7): providing a plastically deformable material including an organic binder having a thermal gel point (4:57-59); forming the plastically deformable material through an extrusion die to form the wet ceramic body (6:42-63); passing the wet ceramic through a field of energy having a frequency in the microwave range of 100 MHz to 30 GHz (4:55-66, 10^{13} is equivalent to 10 GHz); and heating the wet ceramic body to gel the organic binder (5:20-26). Brundage is silent to the claimed modes. However, White teaches that a mode stirrer (1:65-2:3 and 2:30-59), which would have varied the frequencies at which the various modes occur (3:23-27). In combining White's mode stirrer with Brundage's method, it would have been inherent or obvious that at some point in the cyclic movement of the mode stirrer (2:30) that a TE(xy) or TM(xy) mode having x from 1 to 7 and y being 2 would have been generated, meeting the claimed limitation. Note that White

teaches either TE or TM modes (6:73-75). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate White's method into that of Brundage in order to "deliver energy uniformly to a large number of the possible resonator modes" (White, 2:16-17) which would have beneficially provided more uniform heating to the cavity and Brundage's article.

4. **Claim 13** is rejected under 35 U.S.C. 103(a) as being obvious over Brundage (USPN 5223188) in view of Jow (Rev. Sci. Instrum. 60(1), January 1989). In this claim, the Examiner interprets the word "between" to be exclusive of the endpoints of the claimed range. In this case, because the TE and TM modes can only occur in integer values, this claim is interpreted to be drawn to TE(xy) or TM(xy) modes where x is any integer from 1 to 7 and y is 2. **As to Claim 13,** Brundage teaches a method for stiffening a wet ceramic body comprising (Cols. 5-7): providing a plastically deformable material including an organic binder having a thermal gel point (4:57-59); forming the plastically deformable material through an extrusion die to form the wet ceramic body (6:42-63); passing the wet ceramic through a field of energy having a frequency in the microwave range of 100 MHz to 30 GHz (4:55-66, 10^{13} is equivalent to 10 GHz); and heating the wet ceramic body to gel the organic binder (5:20-26). Brundage is silent to the claimed modes. However, Jow teaches that it is known to provide TM(012) mode, which is interpreted to be the same as TM(12) mode, for heating and chemically reacting materials (Page 96, right column, lines 2-5). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate Jow's method into that of Brundage because Jow specifically suggests that the single mode frequency utilizing TM(012) mode be

applied to processing of chemically reacting polymers and composite materials. Brundage's method provides a chemically reacting polymer and composite materials, and thus the combination would have been prima facie obvious.

Response to Arguments

5. Applicant's arguments filed 8 August 2005 have been fully considered but they are not persuasive. The arguments appear to be on the following grounds:

a) Nowhere in Brundage is the claimed range specified. The range in Brundage equates to 10 MHz to 10,000 GHz. Applicants have discovered that operating within the narrower microwave range of 100 MHz to 30 GHz provides significant unexpected advantages such as improved coupling and less water loss. The claimed range brings about unexpected results and a marked improvement.

b) Claim 13 is allowable for the same reasons as Claim 11, and for the additional reasons that these specific modes couple efficiently to the wet ceramic body.

6. These arguments are not persuasive for the following reasons:

a) The Applicant is thanked for pointing out a minor calculation error in the previous action. Brundage's disclosed range is 10^7 Hz to 10^{13} Hz, which is equivalent to 10 MHz to 10,000 GHz. However, the claimed range of 100 MHz to 30 GHz is still fully encompassed by Brundage's disclosed range. While the Applicant's arguments are drawn to an asserted distinction between Brundage's radio frequency and the instantly claimed microwave frequency. The Examiner cites the reference "Electromagnetic Spectrum,"

(http://www.lbl.gov/MicroWorlds/ALSTool/EMSpec/EMSpec2.html) as evidence contrary to the Applicant's position. Attention is drawn to the "Common name of wave" and to the "Frequency" denoted in waves per second, which is equivalent to Hertz, or cycles per second.

In particular, Claim 11 is drawn to 100 MHz to 30 GHz, which is the equivalent of 10^8 waves per second to $3*10^{10}$ waves per second. The instant application refers to these frequencies as microwave frequencies. However, the Electromagnetic Spectrum reference provides evidence that waves having the frequencies sought in Claim 11 are more commonly referred to as radio waves, and thus appear to still be anticipated by Brundage's teaching of radio frequency waves. Because the common name for "Radio Waves" appears to only be applicable to waves having frequencies below 10^{10} Hz (10 GHz), Brundage's teaching of radio waves appears to distinctly teach the same range to which instant Claim 11 is now drawn. In other words, Brundage's use of "RF or radio frequency energy" (4:62) specifically emphasized the same frequency range now claimed, and therefore still anticipates the claim. It should also be noted that Brundage is non-limiting in the range disclosed, and also teaches specifically that shorter wavelengths can be used (5:1-5)

While the Applicant's arguments to unexpected results have been considered, the Examiner cites the reference to Brundage for specific teaching of the problem of cracking (1:42-2:7). Brundage teaches a method that appears to resolve these problems in the prior art by a) gelling the binder, b) causing more uniform evaporation, or c) by a combined effect of both gelling and uniform evaporation (6:64-7:6). The aspects of reducing the propensity for cracking by application of the claimed frequency range do not appear to be unexpected when considered in view of Brundage's specific problem of the teaching of cracking (1:42-2:7) and radio

frequency radiation of the same frequencies now claimed being applied to resolve these problems (6:64-7:6).

b) Claim 13 is believed to be suitably addressed by the two rejections presented in this action. The reference to White shows that mode stirrers are known, which would have inherently or obviously provided modes within the claimed range, and renders obvious the particular modes now claimed. The reference to Jow teaches specifically a TM mode within the claimed range being suggested specifically for reactive polymers (See Page 96, right column, lines 2-5 and Page 103, left column).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Daniels whose telephone number is (571) 272-2450. The examiner can normally be reached on Monday - Thursday, 7:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJD 9/18/05

MICHAEL P. COLAIANNI
SUPERVISORY PATENT EXAMINER